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☞See advertisement on last page.

Poetry.

LIGHTS OF GENIUS.

BY MISS ALICE CAREY.

Upheaving pillars, on whose tops
The white stars rest like capitals,
Whence every living spark that drops
Kindles and blazes as it falls!
And if the arch-fiend rise to pluck,
Or stoop to crush their beauty down,
A thousand other sparks are struck,
That Glory settles in her crown!

The huge ship, with its brassy share,
Ploughs the blue sea to speed their course,
And veins of iron cleave the air,
To waft them from their burning source!
All, from the insect's tiny wings,
And the small drop of morning dew,
To the wide universe of things,
The light is shining, burning through.

Too deep for our poor thoughts to gauge
Lie their clear sources bright as truth,
Whence flows upon the locks of age
The beauty of eternal youth.
Think, O my flattering brother, think,
If thou wilt try, if thou hast tried,
By all the lights thou hast, to sink
The shaft of an immortal tide!

GIRL OF THE BLUE EYE BRIGHT AND BEAMING.

Oh, for the time of the Summer's dawn,
To hear the lark his carol singing;
Oh, for a walk on the dew-clad lawn,
When health from every breeze is springing.
Oh, for the shade of the hawthorn tree,
With the mid-day sun above it gleaming;
Oh, for such hours to spend with thee,
Girl of the blue eye bright and beaming!

Oh, for the time of the evening's close,
With not a breath its peace destroying;
Oh, for a share of its sweet repose,
But not alone the bliss enjoying;
Oh, for the hearth and the winter drear,
When joyous hearts with love are teeming;
Oh for such hours with thee to share,
Girl of the blue eye bright and beaming!

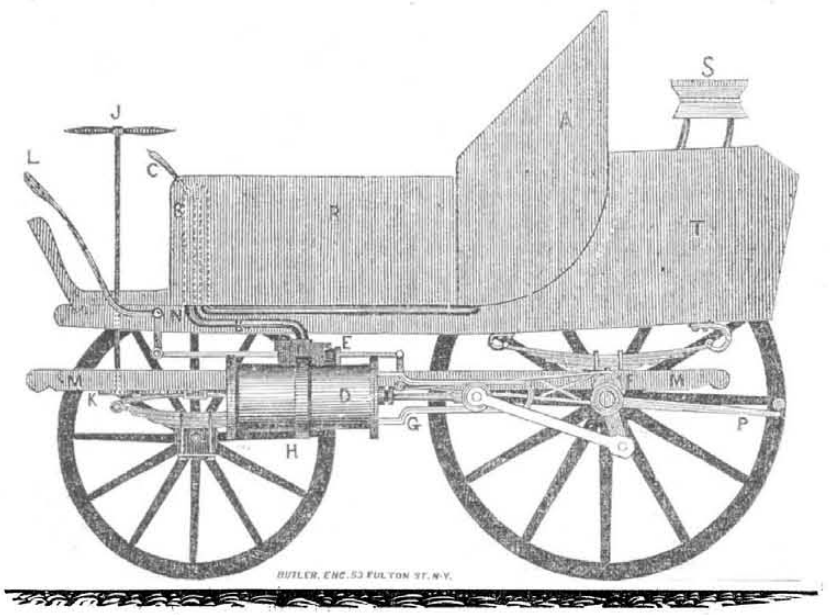
Oh, for a life 'mid scenes like this,
Unclogged by worldly wealth or splendor;
Oh, 'twere a life of radiant bliss,
Shared with a feeling of heart so tender;
Oh, what a fairy scene might be,
In a land where freedom's flag is streaming;
'Twere heaven on earth to be there with thee
Girl of the blue eye bright and beaming!

The Future.

The proud throne shall crumble,
The diadem shall wane;
The tribes of earth shall humble
The pride of those who reign.
And war shall lay
His pomp away;
The fame that heroes cherish,
The glory earned in deadly fray,
Like flowers that fade and perish.
Honor wafts, o'er all the earth,
Through endless generations,
The art that calls the harvest forth,
And feeds expectant nations.

STEAM CARRIAGES FOR COMMON ROADS.

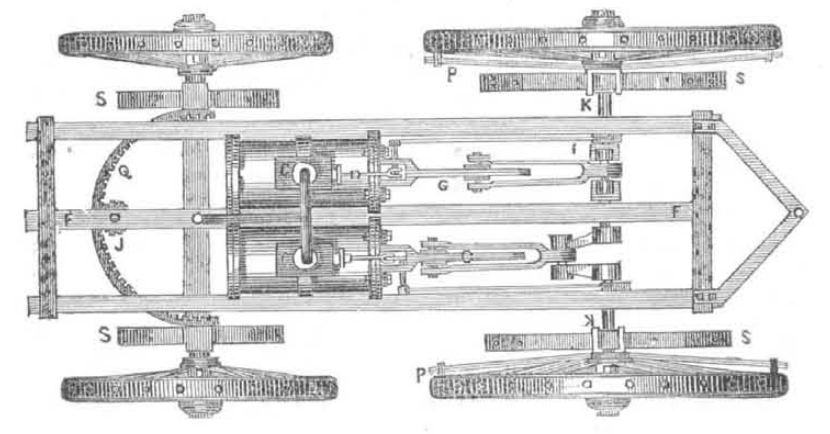
Figure 1.



The invention of Locomotives for common roads is not new to a few, but we presume that it is to many. Of this we were convinced a short time since, by a very respectable gentleman, who called upon us, with such a carriage, a new invention to him, but not so to us. We have also had many enquiries lately respecting such kinds of carriages, especially since we recommended the use of steam carriages for our plank roads. To throw some light on the subject we present this week a side and ground plan of the Locomotive described by Barlow, and invented by Mr. Gurny, an Englishman, and which on a common road went at the rate of 8½ miles per hour. We hope that these engravings will draw the attention of our mechanics to the subject, as we think some of our engineers could so improve on this, as to make it run at the rate of 12 miles an hour on our plank roads.

A, is the position of the boiler without showing the smoke pipe. B, is a steam pipe which leads from the boiler down by N, to the valve boxes of the cylinder D, (there is a cylinder on each side, inside of the travelling wheels.) There is a small wheel attached to the piston rod which runs between two parallel bars G. Attached to this wheel by a spindle is a double connecting rod and during every revolution of the crank the parallel bars are inside of the rod. The fuel and water are kept in R and T. C, is a handle on the steam pipe to regulate the supply. M, is the frame. L, is a lever which the conductor by pulling up, reverses the motion of the carriages or propels them backwards, if necessary. P, is a driving arm. S, is the seat. I, is a lever connected with a pinion K, for turning the carriage, but these will be be better understood by fig 2.

Figure 2.



F F, is the framing I, is the pinion, working into the rack Q, for turning the carriage by the handle, seen in fig. 1. P P, are driving arms, by means of which power is conveyed from the crank shaft to the circumference of the hind wheels, so that one or both wheels may be used. One or both wheels may be used thus it required, as it is obvious, that if the bolt of the driving arm be withdrawn the driving arm will revolve without propelling the wheel. S S, represent the carriage springs between which and the wheels are the driving arms. K K, are the crank shafts. C C, are the valve boxes of the cylinders. G G, are the parallel bars, seen better in fig. 1. The valve rods will be easily distinguished at the extreme ends of the crank shafts, one of them represented by I.

This form of locomotive for common roads was used only for dragging other carriages, and for that purpose it might be useful on our plank roads. When the carriage is to be started, the steam having been up, the conductor opens the steam cock by the handle at his side. The steam then passes through B B, to the cylinders and the action of the engine commences urging forward the carriage on its journey.

It must be known to many of our readers that the ingenious Oliver Evans proposed to drive steam wagons over the roads in Pensylvania. As yet however, no practical test of this kind of Locomotion has been made in our country; in England it has, and would have been successful only it met with such opposition from the Turnpike trustees and from one unluckly accident that occurred on the road between Paisley and Glasgow in 1834, whereby a number of lives were lost.—The experiments made on the Paisley road in Scotland, were mechanically successful—the carriages went through the streets as if drawn by horses and up and down the hills likewise On the road between Cheltenham and Gloucester, England, they were also successful, mechanically speaking. Now as we have no road-trust aristocracy here, we hope to see them permanently successful.

RAIL ROAD NEWS.

The Pennsylvania Railroad.

This company has published a report of the chief engineer, upon the progress of the work, and contains an estimate of the cost. It states that to secure the objects of the company, the trade of the west, the subscriptions must now be filled up. In May 1850, it will be opened to Holidaysburg, and in connection with the Portage, there will be a continuous line of railway, extending from Philadelphia two hundred and eighty-seven miles, out of three hundred and fifty. The western side will be finished the same year as the eastern. The report says:

The absolute necessity of this road to the trade of Philadelphia, is universally acknowledged. The completion of the Cincinnati and Sandusky road, brings that city within three days ride of New York for eight months in the year.

The trade of the Ohio river, which once belonged exclusively to Philadelphia, is now diverted to New York by this new channel of the Lakes. Hundreds of passengers daily pass over that road to New York; where the travel goes, there goes the trade.

The Harrisburg and Lancaster Railroad Company, Pa.

From the annual report of this company, its affairs are in a most prosperous condition. The whole unfunded debt, amounting to upwards of $47,000, has been paid off out of the net surplus receipts of the road; and after paying the interest of the funded debt, and the current expenses of the year, there will be a balance in the hands of the Treasurer of $12,413 11, which, added to the amount paid off, shows that the profits derived from the business of the road are more than nine per cent, on the capital stock of the company.—The Board of directors flatter themselves that the Company is now in such a condition that the nett profits of the road will be amply adequate (after payment of interest on the loans) to pay regular dividends to the Stockholders, besides making appropriations towards a contingent fund, to liquidate the funded debt of the Company.

The Injunction applied for by the stockholders of the Niagara Bridge against Mr. Ellet, the engineer and contractor, has been refused. This is just as we predicted.

The Arctic Expedition.

The log-book of the cutter Bee, Captain Weldon, has the following intelligence:—"July 16. Spoke the schr. Mayflower, Smith master, who had seen the American whaler M'Lellan, of New London, Jackson, master, with forty tons of oil. The American reports her Majesty's ships, under Sir J. C. Ross, as having reached Lievely, Disco Island, on the 2d inst., all well; and Captain Ross had left despatches for the Admiralty, to be forwarded by the first Danish vessel for Europe, and that Captain Ross immediately proceeded in search of his friend Sir John Franklin. The crews were all well." Disco Island lies on the west coast of Greenland, at the entrance to Baffin's Bay, near 70 degrees of latitude.—A voyage five or six degrees farther north will lead to Barrow's Straits, and those regions where intelligence of Sir John Franklin is most likely to be procured.

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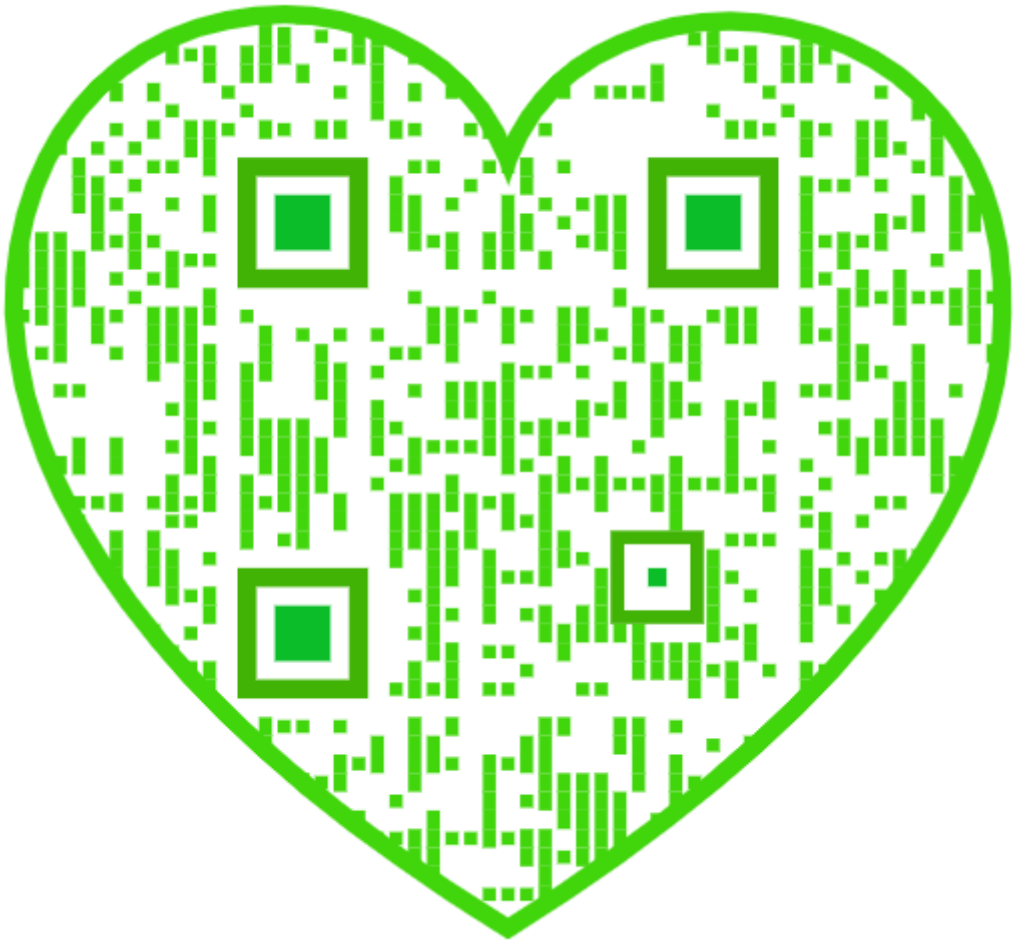

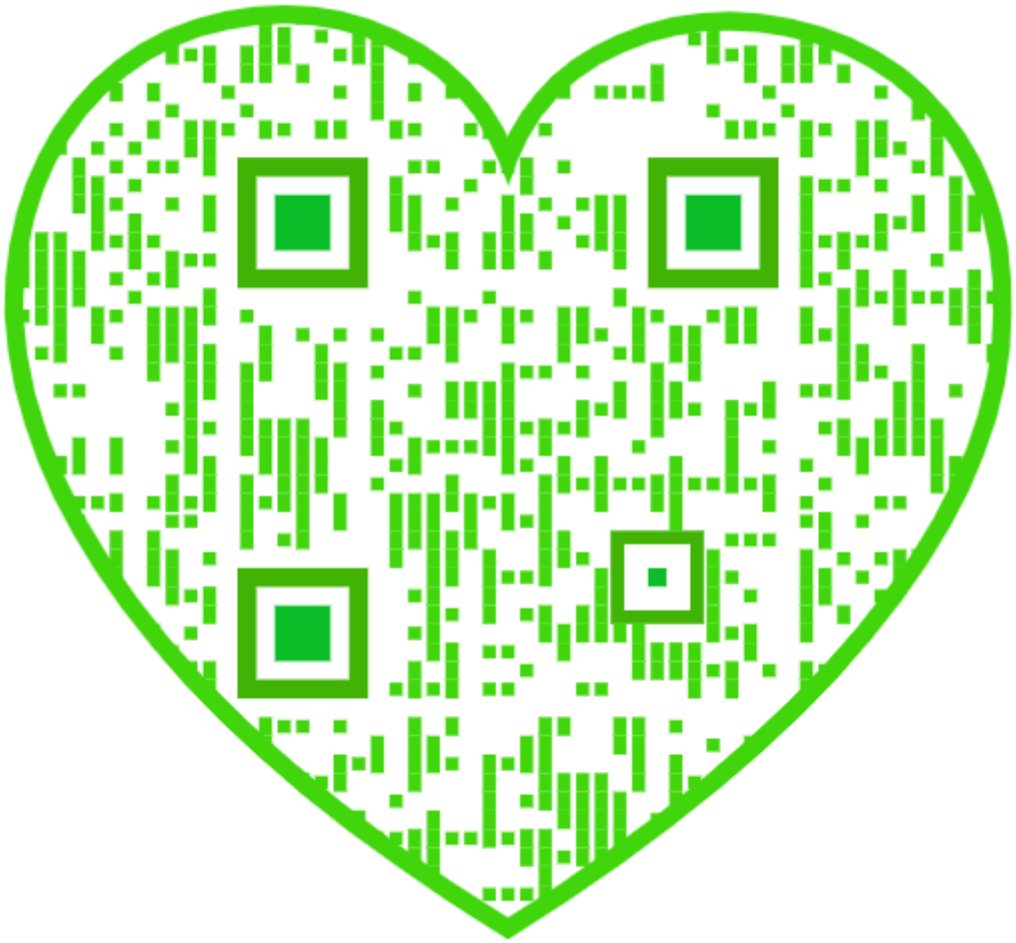

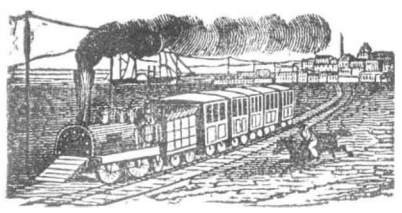

The Fair of the American Institute.

No. 1.

The 21st Annual Fair of the Institute opened up last week, after storms and rains, into clear and sunny weather inviting all who pleased to visit the Castle. We promised last week to say something about the articles exposed for show and observation, and will therefore say nothing about the appearance of the Hall, &c., as a description of it one year might suit, like an almanac, for a first edition of twenty in succession.

GUYON'S COTTON PRESS.

This press of Mr. H. Guyon, No. 95 Thompson st., this city, appears at the Fair this year with an entire new and useful improvement. The long horizontal levers are superseded by the curved progressive kind and it is thereby rendered far more compact and portable. Not a single cog wheel is used,—the great objection to all such kinds of presses. The power is now applied in a most direct manner, and we have no doubt but it is now the most perfect press of the kind as its works are of the the most simple and effective order.

FULTON'S STEAM PUMP.

Among the novelties in the machine line is G. W. Fulton's Steam Pump—a Baltimore invention and worthy of no small share of attention. It cannot be better explained than to say, that the power of the steam is as directly applied to the pumping of water as in Nasmyth's steam hammer, which was in operation close beside it, and which is now generally known and understood.

WATER WHEELS.

The most conspicuous water wheel at the Fair is the *centre vent pressure* of Haviland and Tuttle, manufactured at the Fulton Iron Foundry, South Boston. It runs in a glass vase along side of Fulton's steam pump and attracts great attention. It has many strong certificates of very respectable gentlemen as to its practical qualities. One of five feet in diameter, with one pair of Burr stones, 5 feet diameter, ground 40 bushels of corn into merchantable meal in one hour under a head of 7 feet. One experiment gave 2,500 pounds of merchantable meal in 57 minutes under a head of 6 feet 2 inches of water (no back water.) The stones made 144 revolutions per minute. Under a head of 4 feet the stones turned out 25 bushels of good meal per hour.

STEAM ENGINES.

There are a number of these at the Fair, the most novel of which is Tremper's Rotary already described in our columns. Mr. Burdon, of 100 Front st, Brooklyn, has two beauties, which were generally and justly admired. Mr. Burdon is a very extensive and excellent builder of portable engines.

The Mattewan Company, N. Y. exhibited a very fine double cylinder engine, which proves that Company to excel in Machinery of every description, such as shafting—planing machines, and machinery for the cotton manufacture.

LATHES.

The Lathes are more numerous this year than last, and in the foremost was Mr. Hartson's of Gold st., N. Y. There are so many little odds and ends about the different lathes, that it is impossible to particularize. We always look to the correctness and solidity of the work and material, being convinced that these characteristics are of the most practical importance.

METALIC PACKING.

A very neat and simple elastic metalic packing was that of Dolliver Johnson, engineer, of Charlestown, Mass. In fact it is the most simple packing that we have ever seen and will no doubt come in general use. Messrs. Allen and Noyes, of Greenbush, N. Y., also exhibited their metalic packing, but this kind has been made known to our readers before through our columns.

PADDLE WHEEL.

A great variety of paddle wheels are to be seen, and some of them sad retrogade movements in the history and theory of propulsion. The paddle wheel has been a kind of perpetual motion enigma to hundreds, and curious solutions have been given of the problem. We will not advert to the absurdities of the question, but simply state that all have planetarily struck for a vertical dip and lift of the paddle and many funny plans have been tried to effect this object. One model at the Fair to accomplish this is a good one: it is named the Eccentric Paddle, made by a mechanic in this city. It is the same as Morgan's celebrated one and is new here we believe, although the invention is somewhat old. We should like to see some of our river boats try it, as it is the most simple one of the kind ever brought before the public.

COTTON GIN CYLINDER.

This invention of S. R. Parkhurst is intended to supersede the present Gin Saws. It is simply an iron cylinder with angular cut teeth which appear something like a card, but the teeth are so many sharp blades, whereby in the operation the cotton fibres are drawn below the outer surface of the teeth and the seeds are left to fall from the cylinder when it is cleaned of cotton which is done by the ordinary brush.

SAWS.

We have never seen so many beautiful Saws, as those exhibited by Messrs. Hoe of this city. Each is ground by a new patent process; and bright as mirrors. A decided improvement is observable in these American manufactured Saws of Messrs Hoe from the saws that used to be exhibited a few years ago.

SCAGLIOLA.

A number of columns, table tops, &c. of Scagliola is exhibited by Mr. Farelly, of Canal st., this city. We have seen many specimens of this substitute for granite and marble, but never to our recollection have we seen any that could compare to the specimens of Mr. Farelly. They imitate every kind of fancy marble while the surface is smooth and brilliant as glass. For ornamental work, in the interior of dwellings, Scagliola is certainly superior to marble, at least this much can be said about it, "that it can be made of every variety of color, to carry out the decorative design of any apartment."

ARTIFICIAL SLATE.

Mr. Blake, of Akron, Ohio, exhibits his artificial slate. This is made from a substance found in a natural state at Sharon, Ohio. It is found of the consistence of tallow but by a few days exposure it becomes perfectly hard. By grinding the substance and mixing it with oil, it is said to be an excellent and fire proof paint. A patent was granted to Mr. Blake for the application (a singular circumstance, we think,) and it has been successfully used both for paint and covering roofs. It really is an excellent slate. It is lighter and not so brittle as the Welsh kind. In appearance it resembles gutta percha.

Mr. Derby, of 56 Ann st., this city, also exhibits *fire* and *water proof paint*. All paint should be water proof, but the *fire proof* is an additional quality. This paint is cheap and should be used extensively for outhouses. We would heartily recommend it for this purpose.

FURNITURE.

In the Furniture department there are many improvements, among which we noticed the Portable Divan Bedstead of G. Clayton, No. 221 Pearl st., this city. Its principal feature is economy in room, answering both for sofa and couch and so portable that it can be carried about like a trunk. This is an ingenious and useful invention. There are a number of other improved pieces of furniture, and useful machines, which we shall notice next week. There are about 2000 articles entered, and we must say that we can only notice but a limited share of what is new, most of the articles being exposed more for advertising show than any thing else. We therefore have and will confine ourselves to notice only the new and useful, and for that purpose, we will devote next week more space to the subject than we have done this, as articles require a careful examination from us before we speak of them confidently, and it is our purpose to speak only of what is interesting to the mechanical and scientific world.

Wholesale Poisoning.

Nearly the entire company of the Lowell City Guards were poisoned by drinking coffee one night last week while at muster in Littleton. The coffee was made in a vessel with a copper bottom, and had stood in it for several hours. It was partaken of by most of the company through the evening, and during the night every one who had partaken of it was more or less sick—some of them violently. The surgeon and assistant surgeon were fortunately there, and attended to their relief with much success. The number poisoned was over forty. Three of the company who did not drink of the coffee were not affected with any of the symptons under which the others suffered.

The poison, however, could not have been the effect of the coffee upon the pure metal, but there must have been an oxide in the kettle before the coffee was put into it.—Preserves are made in clean copper vessels and no evil results therefrom.

Quadrature of the Circle.

It is reported that Mr. Seba Smith delivered a lecture lately at Portland, Maine, on the "Quadrature of the Circle," in the course of which he claimed that this problem, the solution of which has from time immemorial set at defiance the ablest mathematicians, and been demonstrated to be impossible, has at length been accurately solved by John A. Parker, formerly of Portland, and now of New York. Mr. Smith farther stated that several important astronomical calculations have already resulted in consequence. The processes which led to this solution are in preparation for the press, and will soon be published.

Sturgeon Flesh in Europe.

The flesh is fat, very palatable, and much better in the Summer, after the fish have been some time in fresh water. That which is not eaten fresh is cut into large slices, salted, peppered, broiled, and put in barrels, where it is preserved in vinegar, and fit for transport. A considerable quantity of their flesh is smoked. The wholesale price of pickled Sturgeon is from $6 to $12 a hundred weight. The Caviar is prepared in three different manners: 1. 2 lbs of salt are added to 40 lbs of roe and dried upon mats in the sun. The price of 40 lbs. is $1. 2. 8-10 lb. salt is mixed with 40lbs of roe, then dried upon nets or sieves, and pressed into barrels. This is sold for a little more. 3. The best Caviar is that when the roe is put into sacks made of tow cloth, and left for some time in strong pickle. These sacks are then suspended in order to let the salt, watery substance run off, and finally squeezed, after which the roe is dried during 12 hours and pressed into barrels. This roe, of which 40 lbs. are sold for $1 50 at the place, is that which is sent all over Asia and Europe as a considerable article of commerce, and known by the name of Caviar, and is eaten with bread like cheese.

Importance of Punctuality.

Method is the very Hinge of Business; and that there is no method without punctuality is evident, because it subserves the peace and good temper of a family; the want of it not only infringes on necessary duty, but sometimes excludes this duty. The calmness of mind which it produces is another advantage of punctuality; a disorderly man is always in a hurry; he has no time to speak to you because he is going elsewhere; and when he gets there he is too late for his business; or he must hurry away before he can finish it.—Punctuality gives weight to character. 'Such a man has made an appointment; then I know he will keep it.' And this generates punctuality in you; for like other virtues it propagates itself. Servants and children must be punctual where their leader is so. Appointments, indeed, become debts. I owe you punctuality, if I have made an appointment with you: and I have no right to throw away your time if I do my own.

A fish came through the hydrant of a hotel in Cincinnati lately alive and in good condition, and delivered himself up to the authorities in the kitchen. It was no doubt a very accommodating fish but scarcely polite enough to jump into the Alderman's pot.

An Ancient Press.

The Leonardtown, Beacon (Md.) says that but few of our readers are aware, we expect, that the press upon which our little sheet is printed, is the oldest now in use in the United States, and probably in the world. Yet such is the fact. The press now in use by us has been in almost constant service for more than a hundred years! Upon it was first printed "the Maryland Gazette," the earliest paper published in the Province of Maryland, and one among the very first in America. Upon it, also, was printed the first volume of the Laws of Maryland that ever appeared. It is constructed somewhat on the Rammage principle, and requires three pulls, though two were originally sufficient to produce a good impression. It is truly a venerable object, and has afforded us matter for many an hour's pleasant reflection, and we shall be sorry, indeed, when the time arrives for it to be removed from the place it has so long occupied in our office.

Singular Phenomenon.

The Matagorda (Texas) Tribune, contains an account of an oily, yellowish green scum which has recently appeared upon the peninsula and bay shore in that vicinity. It has an offensive smell, like putrid flesh.—The account says, "In Uncle Moses Bayou, which is some twenty yards wide, and about four hundred yards long, the matter, whatever it is, appeared to issue from a particular spot." It emitted a strong phosphorescent light when agitated. Great numbers of fish have died in the waters by this scum.

Hours of Labor.

The French Assembly having passed the law fixing the day's labor at 12 hours, the master masons at Paris have attempted to compel their workmen to labor for that length of time, although the day's work for that trade has been only 10 hours from time immemorial, and the decree of the Provisional Government, superseded by the law, introduced no change in it. In consequence of the attempt of the employers, the workman have struck. They prefer to suffer the serious inconvenience of being out of employment to the imposition which the masters have sought to put upon them. In this case the Republic is worse than the monarchy.

Religious Manufacturing Association.

The tendency of large manufacturing establishments to irreligion, has led to to the starting of one in West Springfield, Massachusetts, on a new plan. The directors and agents are to be religious men, and no person will be employed who uses profane language, violates the Sabbath, drinks intoxicating liquors, or is in any way known to be immoral. The boarding-houses will be kept by pious persons, and a church opened when the factory commences, for the use of those employed. It is intended as an establishment where christian parents may safely place their sons and daughters.

We hope that with the profession of piety they will also mingle the practice—which does not consist in working 14 hours per day for potatoes and salt.

In the city of Boston the increase of crime since 1832, as shown by police cases, has been over one hundred and fifty per cent—of this it said that the increase the past year alone is one hundred per cent! The city of Pilgrims and the city of Quakers, are outfleeting New York in criminality. What is the remedy?

There is now in bloom, in the garden of Drummond Castle, Perthshire, Scotland, a splendid American aloe, with a stem thirty feet high, supporting 2800 flowers.

Four thousand paupers boys and girls, will this year be sent to Australia from Ireland, and 10,000 from England.

In his Letters from the United States" in the Manchester Times, Mr. Prentice says: "I saw more cheerful faces in Connecticut, than in all the other States put together,"

The Watertown and Rome Railroad has been let to a New England company of railroad builders, who begin operations forthwith. The cost of grading will amount to nearly half a million of dollars.

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American Scientific Association.

No. 3.

THE MISSISSIPPI RIVER.

The lands in the Miasissippi Valley are so subject to the increase of exposure, that we may hazard the assertion with safetv, that there is not by twenty or twenty-five per cent as much water now passes down the Mississippi annually as there was twenty-five years ago. This conclusion is not arrived at hastily, but by patient observation of the circumstances in connection therewith during all that lengthy period, at whose beginning there were annual inundations of almost all the lower bottom lands and for very lengthy periods of submergence of almost all the bottom lands, from the Bluffs or Highlands on one side of the river bottom to those on the other side, and in such a degree that but little or no hopes were entertained of the practicability of their redemption by any artificial means, that is, on any scale. But such has been the diminution in the annual quantity of water discharged from the Valley, that those lands have been progressively and rapidly redeemed from overflow, until very great portions of them are now in the highest state of cultivation, and with but comparatively slight assistance from art, in the way of embankments, and these such as would not have been at all available against the overwhelming effects of former floods, and the length of time of their continuance; then there were lengthy and annual inundations; both deep and expansive, of the waters over almost all the bottom-lands; but now the River seldom rises in the same elevation as formerly, and when it does it is of much shorter duration, and the waters are almost exclusively confined to the channel of the River, in place of being spread over almost all the bottom-lands the whole Spring and early part of Summer. All the advantages are progressively but as rapidly extending themselves, while the causes remain unsuspected or overlooked, but none the less secure. As a farther evidence of the altered condition of this River, we may mention the circumstance, that in former times the steamboats ascending or descending the River were detained about half their time by dense fogs, now hardly any such obstructions prevail—so that packets succeed in making their trips to an hour with no fears of such retardation. Assuming that the diminution of the water will continue in somewhat the same ratio they have recently done, the time cannot be very far distant when all apprehension from inundation will have in a great measure passed away. We will farther remark, as an evident change, that the quantity of floating timber or drift wood passing annually down the river has diminished in a far greater ratio than that of the water, so that the aggregate quantity cannot now be over 50 per cent. of that which formerly passed down.

We will now give you the quantity of soily matter with which the waters of the Mississippi are annually charged, together with its effects in the formation of lands or filling up of depressions. In order to arrive at these requiied facts, the following methods were adopted: first, a series of glass vessels of cylindrical form were procured, to one end of which was attached a tin tube of the same cylindrical diameter as that of the glass vessels to which it was attached in the tin tube; immediately above its junction with the glass cylinder there was inserted a small brass cock, by which the tin tube could be conveniently discharged of its contents at pleasure without causing disturbance to the contents of the glass vessels below—this tin tube was in length 48 inches. This tube was charged with water from the Mississippi River, and this water allowed time to deposit its contents into the glass vessel below; that being accomplished, the water was drawn off, and the tube recharged by water from the river, each particular charge being noted This was successively repeated from the different conditions and stages of the river's height and velocity, which very materially affects the quantity of suspension, this by a succession of such changings and dischargings of the tin tube, amounting in all to 484 times, or, in the aggregate, to a column of water of 1,936 feet from which column of water there was deposited a column of sediment inclosed in three tubes of 44 inches. Assuming that, therefore, to be the true quantity and the true product of a column of river water of 23,232 inches, it necessarily follows that as 44 is to 23,232, so is the quantity of sedimentary matter contained in the water to the volume of the river or, in other figures and words, the mean proportional quantity of sediment to the river is as 1 to 528.

We have already ascertained the quantity of water annually discharged by the Mississippi River to be, 14,883,360,636,880 cubic feet, there must then be deposited from that quantity of water, 28,188,083,892,1-6 cubic feet of solid matter.

Being in possession of the data by which may be computed with some approximation to certainty, the effects of the Mississippi deposits in the formation of land, or in filling up the Gulf into which it is emptied, we will avail ourselves of such data, and endeavor to present the quantites deducible therefrom. In estimating the Delta of the Mississippi, we have adopted for it the superfices assumed by Dr. Lyell, in his investigation of this subject, and will say with that gentleman that the Delta of the Mississippi River comprehends all that great alluvial plain which lies below or to the south of what until recently, was the first branching off or highest arm of the river called the Achafalaya. This Delta is computed to contain a superficial area of 13,600 square miles.

In deciding on the depth of this quantity we will adopt that which was assumed by Prof. Riddell on this subject, and say that it is of the average depth of one fifth of a mile or 1,055 feet, inferred from that being the average depth of the Gulf of Mexico, from the Balize to the point of Florida.

We find by computation, agreeable to the above data that it would require a quantity not less than 400,378,429,440,000 cubic feet, or 2,720 cubic miles solid matter to constitute this Delta, having ascertained the quantity of solid matter annually brought down by the Mississippi river to be 28,188,083,892 cubic feet, which would be equal to one square mile of the depth of 1,056 feet in 381 1-5 days or one cubic mile in 5 years and 81 days—it therefore follows that it would require a series of 14,203 4-5 years for the river to effect the final formation of the present delta.

We are not disposed to consider that great alluviar plain, stretching with the river from the above designated *Delta*, as far up as Cape *Gerardian* in *Missouri*, as any other part of the delta proper, nor can it ever have been any continuation of the Gulf of Mexico. The evidences are vastly against any such conclusion, inasmuch as the deluvial which constitutes the highlands bordering on each side of this alluvial plain, by its general distribution would have been equally deposited in such gulfs or arms of the sea, which in reality could not have been the case, for the river has excavated through this diluvial and exposed it in many places, resting on what is evidently of another formation; and such is not only found to be the case at the base of the diluvial hills, but the same formation is found also to constitute the bed of the river at many other points detached for very considerable distances from any highlands.

This bed of the river is a substance of entirely different character from the composition of any part of the diluvial bluffs, and possesses all the characteristics of a well formed rock, which requires a pick to effect its reduction. The superficial area of the valley has been found to be about 16,000 square miles, bounded by highlands on either side, ranging from 50 to 250 feet high above the level of the plain. Should this space therefore have been reduced or excavated by the river as we assumed, it must have transported the diluvial matter, and caused it to form part of its delta. Now assuming the average height of the highlands above the plains to be 150 feet, we would therefore obtain 454½ cubic miles, or 66,908,160,000,000 cubic feet of matter, as its proportionable contribution in the formation of the Delta; the balance required being 332,470,269,440,000 cubic feet to be derived from the reduction of other lands; the two sources being to each other as 1 to 5.98, or by giving another expression to the same quantities, there is in the Delta 2,720 cubic miles of matter; 454½ of which would be derived from the diluvian in the excavation of this valley, the other portion would consist of 2,265½ cubic miles to be derived from other sources or the reduction of other lands.

We have now traced this great river through a period of 14,204 years, but how it was occupied before that time or what was the condition of the country over which its waters passed, is more than we can safely venture to say—but on particular examination of the bluffs, which bound its present plain, it will be very difficult to resist the conviction that the river has great agency in depositing the upper and loamy stratum which varies from a few feet to upwards of fifty in thickness, in all of which stratum there is abundance of land and pluriatile shells, such as those now found in the present deposit from the river.

We have found the age of that deposit to be not less than 14,204 years, through all of which time the waters have been actively engaged in changing the face of the country and transporting 2,720 cubic miles of its matter to a far distant location. The above may be said to comprehend all the required particulars with respect to the waters of the Mississippi River or its deposits.

Gunpowder and Greek Fire.

M. Renaud has lately discovered an Arabian MS. of the thirteenth century, which proves that compositions identically with gunpowder in all but the granulations, were and had been for a long time previously, in the possession of the Arabs; and that there is every probability they had obtained them from the Chinese, in the ninth century.—Many of these were called "Greek fire;" and comparing the account of Joinville, of the wars on the Nile in the time of St. Louis, with the Arabic recipes, there can be little doubt that we are now in possession of what was then termed "Greek fire." Mr. Groves F.R.S., who has investigated the subject experimentally as well as historically, concludes that the main element of Greek fire, as contradistinguished from other inflammable substances, was nitre, or a salt containing much oxygen; that Greek fire and gunpowder were substantially the same thing; and that the development of the invention had been very slow and gradual, and had taken place long antecedent to the date of Schwartz, the monk of Cologne, A. D. 1320, to whom the invention of gunpowder is generally attributed; thus adding to the innumerable it not unexceptionable cases, in which discoveries commonly attributed to accident, and to a single mind, are found upon investigation to have been progressive, and the result of the continually improving knowledge of successive generations.

Tortoise Shell.

Tortoise-shell, or rather scales, a horny substance, that covers the hard strong covering of a bony cohtexture, which encloses the *Testudo imbricata*, Linn. The lamellæ or plates of this tortoise are 13 in number, and may be readily separated from the bony parts by placing fire beneath the shell, thereby they start asunder. They vary in thickness from one eight to one quarter of an inch, according to the age and size of the animal, and weight from 5 to 25 pounds. The larger the animal, the better is the shell. This substance may be softened by the heat of boiling water; and if compressed in this state by screws in iron or brass moulds, it may be bent into any shape The moulds being then plunged in cold water, the shell becomes fixed in the form imparted by the mould. If the turnings or filings of tortoise-shell be subjected skilfully to gradually increased compression between moulds immersed in boiling water, compact objects of any desired ornamental figure or device may be produced. The soldering of two pieces of scale is easily effected, by placing their edges together, after they are nicely filed to one bevel, and then squeezing them between the long flat jaws of hot iron pinchers, made somewhat like a hair dresser's curling-tongs. The pinchers should be strong, thick, and just hot enough to brown paper slightly without burning it. They may be soldered also by the heat of boiling water, applied along with skillful pressure. But in whatever way this process is attempted, the surfaces to be united should be made very smooth, level, and clean: the least foulness even the touch of the finger, or breathing upon them, would prevent their coalescence.

Gypsum Mounds in Western New York.

Throughout the Onondago Salt Group it is known that in the limestone beds of this formation, dome-shaped masses of gypsum occur, which have raised up the superior strata, fracturing them, while a large portion of the rock has disappeared. These masses vary from small lumps one or two feet in diameter, to hillocks of 200 feet base and 50 height; the testimony of the residents in this portion of the country unites in proving that these are yet in progress of formation, several instances having occurred where a gradual elevation of the earth has fractured walls and raised the foundations of houses, where an examination has disclosed one of these gypsum mounds, a few feet below the surface.

The Acid Springs, which belong to these rocks are peculiar as containing a large amount of free sulphric acid, besides portions of sulphates of lime, magnesia, iron and alumina. They have been observed in the townships of Byron, Elba, and Warren, N. Y. and also near Brantford, in Western Canada. That near Brantford contains, by analysis, about 5 parts in 1,000 of sulphuric acid. The amount of baser materials is very small,—while an examination of the same spring, three years since, shows that although the water was less acid it contained as large an amount of sulphates as at present, and was a saturated solution of gypsum. It evolved large quantities of carbonic acid gas. The spring was situated on a small hillock, near the roots of a large pine tree now in decay—while the earth around was barren for several rods. These facts show that the spring has burst out, within a very recent period, and that from some cause or other it is rapidly changing. The decrease in the amount of lime, while the amount of free acid is increased, plainly indicates that it no longer acts on the limestone rocks which here underlie; and lead to the conclusion, which must be regarded as at least very probable, that by this action on the calcareous rock it has formed a mass of gypsum, which by its crystalization and expansion has raised the mound and at length formed such a mass as to protect the limestone from its farther action.

On Some Properties of Alumina.

It has been observed by Wittstein that the precipitate which is obtained from the persulphate or per-chloride of iron, if kept for a great length of time in water, loses almost entirely the property of being soluble in acetic acid. Mr Phillips noticed a similar phenomenon with alumina, arising without doubt from the action of the cohesive forces. Whereas the sesquioxide of iron requires one, or probably two years for the production of the effect; alumina undergoes the change partially in a very short time:—the precipitated alumina does not, however, assume a crystalline appearance, stated to be the case with cohering sesquioxide of iron. If the precipitated alumina is kept for two days moist, and in the solution from which it was precipitated, even sulphuric acid does not immediately dissolve it.

Antimony.

It is to a monk that we are indebted for the discovery of Antimony as a metal. Antimony, although known for a long time, had exercised the untiring patience and researches of the most zealous and ardent alchemists, who deceived by its lustre, had entertained the hope of converting it into a more perfect metal, the ideal of all their operations, that is to say, silver or gold. Antimony was long used in a most queer manner for certain diseases in which this metal was thought beneficial, by being administered only in small doses. To obtain this result, small balls of this metal were made and were known under the name of perpetual pills, because of their being transmitted from generation to generation, without having lost any of their purgative properties.

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New Inventions.

New Boring Machine.

Mr. D. Mathews, superintendant of Messrs. Murray & Co.'s machine shop Baltimore, Md. has invented a new Boring Machine which our valuable exchange the Baltimore Sun, says "will doubtless be of great advantage to machinists, since its susceptibility of application to boring generally is guarantied by the peculiar principles contained in its construction. Some idea of its advantages may be inferred from the fact that it will accomplish the execution of a work in one-sixth of the time ordinarily required by the common process, and will bore out more than fifteen hundred pounds of heavy metal in twenty hours. Another great advantage derivable from its construction is proven by the mode of operation, creating the eyes by the extraction of the metal in one piece, whereas the plan generally used, chisels the substance in such a manner as to produce shavings, thereby occasioning further loss."

New Piano Attachment.

Messrs. Boardman and Gray, Piano Forte manufacturers, Albany, N. Y, have lately invented a new attachment which is styled the Dolce Compana, and produces, when attached to the Piano, a sound not unlike the rich music of the "bells" of the Swiss ringers, lately among us.

Those who have heard it pronounce it to be more beautiful and soft than what was called Coleman's Æolian Attachment, (but which turned out to be Cooper's of Savannah, Georgia.

Improvement in Pumps.

Thomas E. Shull, of Lewistown, has invented an improved Double acting force and lift Pump.

New process to Color Stone and to make it hard and impermeable.

This is a recent French invention to make porus stone impermeable to moisture and also to color it—any color. Whether this is the stone used in Paris for printing on the common press, or not, we cannot tell, although it is somewhat reasonable to suppose that if a figure is drawn upon porous stone with a tallow crayon, and then the rest of the stone bit down with sulphuric acid to leave the lines clear, then hardened as follows, it would print well on the common press.

When the stone is wanted a dark color, a solution is made of 85 parts tar, 10 parts bitumen and 3 parts tallow with a small portion of linseed oil. These ingredients are put in a suitable vessel, and boiled; the patentee prefers using a boiler with a cover, in which a pipe is inserted, by which the spirit and gases liberated in the boiling can be carried off and condensed. When the solution boils, the stone is placed on a suitable frame, and lowered by a small crane into the boiling solution. The stone is placed in a frame for the greater convenience of removing it from the solution.

When the stone has to be soaked through, it will require to be left in the boiling solution for from 8 to 48 hours, according to the size of the stone; but if it is required that the solution should penetrate one inch, two hours immersion will be sufficient; or for two inches, four hours; or for four inches, eight hours; but the time required will vary with different kinds of stone—some stone is of that porous nature, that the pores at the surface will not become filled up even after long continued boiling; in this case mix with a portion of the above-mentioned solution, a mixture of carbonate of lime, rust of iron, granite, and potter's clay, in fine powder. The stone is allowed to cool, and then this compound is applied to the surface with a hot iron or other convenient means.

When it is required that the stone should be of a light color, instead of employing tar as the base of the solution, employ resin of the slightest color that can be obtained, together with turpentine and other oils, and all kinds of gum, in the proportion of 80 parts turpentine, 15 per cent. resin, and the proportions of gums according to the nature; this solution is applied to the stone in the same manner as the above. When the stone is required to have a clear white color, add to the above last mentioned solution, white lead, and zinc, and carbonate of lime. In all cases when the stone is to be colored, this last-mentioned compound is always to be used as a ground, to which may be added for a red—red lead, oxide of iron, Chinese red, Chinese vermillion, dragon's blood; for green—acetate of copper, Brunswick green; for blue—cobalt, Prussian blue; for yellow—ochre.

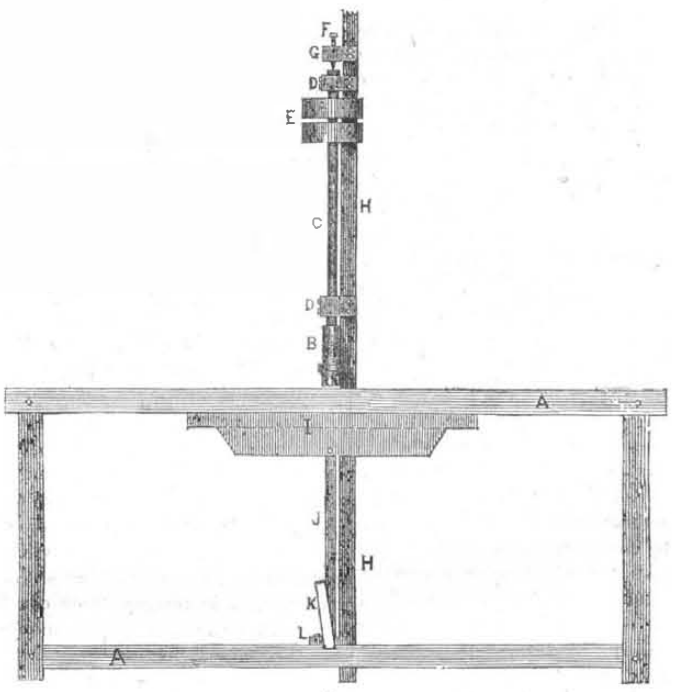
This is the subject of a foreign patent to Francois Teychene, now of London.—Ed.

Yankee Music in London.

The London Atheneum for August announces the arrival at 142 Strand, of one of the "best specimens of pianofortes, manufactured by Chickering, of Boston; price seventy five guineas."

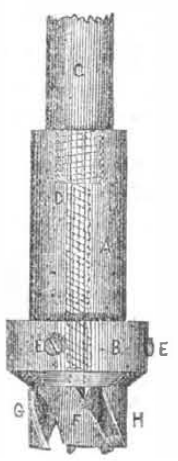
Aye, Mrs. Atheneum, Brother Jonathan is not only bound to cool all the wine in England with his ice—make all the babies dance with his jumper, but is bound to make all the Dutchesses, Countesses and all the other "s's" trip the light fantastic *toe* to Chickering's Piano.

BUNG CUTTING MACHINE.---Figure 1.



We here present two views of a machine invented by Messrs. Dowdy & Sweet, No. 35 Cross st. this city. Fig 1 is a side elevation and fig, 2 a view of the cutter stock and cutters. A, is a stout table. H, is a strong upright post in the middle of the table. To this post the cutter shaft C, is secured by proper bearings D D, to allow it to revolve. F, is a screw which passes through a bearing G, into an opening in the head of N. J, is an elevating bed or rest for the plank that is to be cut into bungs. It is fixed on a treadle J, which is by a foot spring K, which when pressed upon towards L, the bung bed is elevated through an opening in the middle of the table, and as the foot presses K, so is the plank fed up to the cutter till the bung is cut, when the foot being released the bung is driven out by a spiral spring which will be better understood by fig, 2.

Fig. 2.



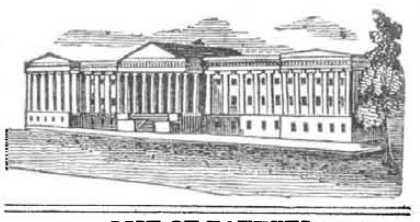
A, is the cutter stock. It is of a cylindrical form with an opening through the centre and a thread a short distance at the upper end to screw in the shaft C. In the centre of the cutter stock is a spindle with a spiral spring on it represented by D. The spring does not reach to the ends of the spindle. The spindle by an opening in C, the shaft, is allowed to pass into it when the plank is fed into the cutters, but when this bung is cut this spiral spring in the centre of the cutter stock recoils as the feed table is lowered and throws out the cut bung. This is the object and use of the interior spiral spring and spindle. G F H, are the cutters. Each is a distinct piece and each performs a different office. They are all set on to the cutter stock which is turned on the outside, leaving them to sit around it like a ring, where they are covered with a snug collar B, and a screw E E, for each cutter secures them to the cutter stock. The inside of the cutters is like a cup and they are arranged almost like screws of different pitch. F, has two little spurs on it one on the inner side and the other on the outer. These cut the cresses of the groove in the plank for the bung, when H follows after and scoops it out, cutting on the outside of the bung—both of these cut straight without any taper—G, is the taper cutter. It is graduated in the edge to the bottom of the cutter stock, therefore it gradually planes the taper of the bung, after the other two cutters have done the rough work. This makes the work easy on the machine, which cuts out about 20 bungs per minute, hand fed, with great ease On the bottom of the stock in the inside of the cutters, there is a small knife that rims off the edge of the bung. This machine has been in operation successfully for some time, and measures have been taken to secure a patent.

Iron Ore.

Prof. Ehrenberg has discovered that bog iron ore, from which the beautiful Berlin castings are made, originates from an animalcule that once had life, the whole mass being composed of the bodies of myriads of these animals; and that the Tripoli or polishing powder, so extensively used in the arts and in Berlin to form the castings of moulds in the iron-foundries, is entirely composed of the shells of similar animalcule, capable of bearing a red heat without destroying their outer casting or shells. Our moulders are practically acquainted with this fact already.

Gunshot Wounds.

At a recent meeting of the Academy of Medicine, Paris, M. Blandin argued that, contrary to general opinion, in gunshot wounds the ball caused a larger wound at its point of entrance than it did at the point of its exit.



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending Oct. 3, 1848.

To James E. Ellen, of Granville Co. N. C. for improvement in machines for cleaning Tobacco leaves. Patented Oct. 3, 1848.

To Cornelius L Goodrich, of Ann Harbor, Michigan, for improved machine for planishing and hammering metal. Patented Oct. 3, 1848.

To Jos. M. Marsh, of New York City, for improvement in Printing Presses. Patented Oct. 3, 1848.

To John Robertson, of Brooklyn, N. Y., for improved method of manufacturing Sheet Lead. Patented Oct. 3, 1848.

To E. C. Sherman, of Philadelphia, Pa., for improvement in Cream Freezers. Patented Oct. 3, 1848.

To A. D. Brown, of New York City, for improvement in Harness Saddles. Patented Oct. 3, 1848.

To E. J. Mallet, of New York City, for improved Bell Telegraph. Patented Oct. 3, 1846.

To Edwin Butterfield, joint inventor with and assignee of G. W. Clark, of Lowell, Mass. for improvement in Mills for Grinding. Patented Oct. 3, 1848.

To E. Sampson and C. S. Collier, of Weathersfield, Vt., for improvement in Scales for Weighing. Patented Oct. 3, 1848.

To Lewis Norton, of Madison, Conn., for improvement in Mills for Grinding. Patented Oct. 3, 1848.

To Marvin Smith, of Meriden, Conn, for improved Table Cutlery. Patented Oct. 3, 1848.

To J. W. Wilson, of Syracuse, N. Y., for improvement in machines for Hoisting. Patented Oct. 3, 1848.

To Zachariah Griffin, of Montgomery, Ala. for improvement in Mills for Grinding. Patented Oct. 3, 1848.

To Levi Hall, of Adrian, Michigan, for improved Saddle Frame. Patented Oct. 3, 1848.

To William B. North, of Jersey City, N. J. for improvement in Mills for Grinding. Patented Oct. 3, 1848.

To Edward Rouse, of Augusta, Maine, for improved method of Steering Vessels. Patented Oct. 3, 1848.

To R. B. and A. C. Jennings, of Livermore, Maine, for improvement in Horse Rakes. Patented Oct. 3, 1848.

To J. Yoder, J. Gillford, and E. Gruver, of Juniata, Pa., for improvement in Corn Planters. Patented Oct. 3, 1848.

INVENTOR'S CLAIMS.

Horse Power.

To James Bogardus, of New York City, for Sun and Planet Horse Power. Patented August 29, 1848. Claim.—What he claims is making the central standard in which the central shafts turns and on which the main sleeve of the travelling wing turns a part of, and projecting upwards from the base frame of which the master wheel makes part, when this is combined with the wing, to which the horse level or beam is attached, and made with two sleeves, one fitting to and turning on the central standard, and the other forming the box for the arbor or shaft of the planet wheel.

Mill Stones.

To Frances Kelsey, of New York City, for improvement in mill stones. Patented Aug. 29th, 1848. What he claims is the mode of constructing mill stones by means of the face plate, groove strips, and partition boards, and the mode of arranging and securing the grinding fragments.

Coal.

To Wm. Easby, of Washington, D. C., for method of converting fine coal into solid lumps. Patented Aug. 29th, 1848. What he claims is the formation of small particles of any variety of coal into solid lumps by pressure.

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NEW YORK, OCTOBER 14, 1848.

The Telegraphic System.

The subject of Telegraphs at the present moment, is engaging deeply the hearts and minds of our people. From the east and the west letters have poured in upon us respecting the legitimate and true claims of telegraphic inventors. The late decision of Judge Monroe of Kentucky, granting an "*absolute injunction*," against a system of telegraphing used by H. O'Reilly, Esq. because it conflicted with the claims of Professor Morse, has been the subject of many bulky communications to a great number of our newspapers.—We have already expressed our opinions upon that decision, so far as it touched one point of the conflict, viz. the Electro Magnetic Telegraph. There is another point of that decision on which we have not yet expressed our opinion, viz. Electro Magnetism. From the decision of Judge Monroe, unjust as it is ridiculous—the exclusive monopoly of Electro Magnetism is held to be secured to Professor Morse, for telegraphic purposes. Now Professor Morse has no right or title or claim to any other mode but that of the *Electro Magnet*—a mechanical use of the magnet in combination with a galvanic current. This we are prepared to show, and will say no more at present upon the subject, but will commence next week and publish a series of articles on this subject, so as to set clearly before the minds of our readers—the distinctive features of the different telegraphs, and the claims of telegraphic inventors. We consider it is our duty to do this, as there are many conflicting opinions on the subject, and there is too much partisan feeling exhibited by the interested friends of opposing parties to judge calmly of the matter.

As the Scientific American is happily always clear of party interest in conflicting claims, we are thereby, not from superior attainments but circumstantial and business duty, enabled, perhaps, to give the subject a more calm examination than any other paper.

The Mechanic Arts.

The true value of the mechanic arts, is becoming more extensively known, and the rights of the toilers more firmly and honestly advocated. We are glad to see this—it is evidence of a more divine spirit infused into our popular literature, than when priest and poet held the working classes to be nothing but appendages of the rich man's estate or the titled noble's pompous train. The article which follows this is selected from the New York Sun of last week, and we justly deem it to be a clear and energetic exposition of the value of the Industrial Arts—and the benefit of those arts to every country that encourages them. We publish it for its real worth and with the hope that more attention and encouragement would be given to our inventors and mechanics, for it is a stubborn fact, that while huge tomes are printed for the benefit of our agricultural interests, and the information contained therein collected by our Patent Office, a few pages only are devoted to the mechanical interests of our country, and the most important information in reference to last year's inventions, has not yet been printed. The interests of our mechanical classes are sacrificed in a great measure to those of another class. Our inventors have justly complained of this, and we hope that this will call attention to the subject in the right quarter. We seek no more than even-handed justice.

Value of Manufactures to a Country.

"Whoever enchances the value of a material for use or trade, is as much a producer as he who produces the material itself. Though the soil is the basis of production, inasmuch as its mines, forests and farm-fields yield the raw material to labor, there are after-transmutations and transformations which in carrying the raw material to its final uses add to, double, and often give a thousand fold value to that material. The flax, hemp, cotton and wool of the farmer owe more than fifty per cent, of their glory to other hands, before they arrive at their highest uses and value.

Thus communities may flourish in wealth and production, without turning a furrow, delving in a mine or hewing down a tree in a forest. Manufacture is equally noble, useful and productive as its basis, agriculture; and no nation can be rich and powerful in commerce that does not foster it. Few consider how much manufacture adds to the wealth of nations, by enhancing the value of its raw materials. How much more the ship is worth complete from the hands of art than the timber, iron and hemp of which it is composed—or the broadcloth, than the wool and dye-woods used in its fabric—or the boots, than the leather in the tanner's vats.

A pound of cotton wool worth as raw material ten cents, has been made worth twenty five dollars by the process of spinning—woven into muslin and ornamented in a tambour, its value has been raised to seventy-five dollars. An ounce of Flanders thread has been sold for twenty dollars, while, made into lace, the same ounce has been sold for two hundred dollars. Steel may by manufacture, be made three hundred times dearer than standard gold, weight for weight. Lead manufactured into small printing type, is increased twenty eight times in value. Iron made into needles is increased in value seventy-five times; into the finest scissors, nearly five hundred times; as blades of pen knives, seven hundred times; as sword handles, polished steel, one thousand times.

Thus, manufacture is the best friend of that labor which brings forth the raw material, and the manufacturer from ten to a thousand times a greater producer than the cotton grower and the miner. The raw material is the basis, but manufacture is the crown of national wealth, and the chapter of political economy which man should most study, is that which relates to arts by which the value of his raw material is increased ad-infinitum. Those are the arts of manufacture"

New Telegraphic Line.

A new line of Telegraph is about to be put in operation between this city and Boston by Mr. O'Reilly.

We have been informed that Bain's electro chemical telegraph (a cut of which appeared in No. 35 vol. 3 of the Scientific American,) is to be used on this line, and, for the transmission of foreign news at least, it will distance all competition, as by it 1000 letters can be transmitted from Boston to this city in one minute. It will do all the business with one wire.

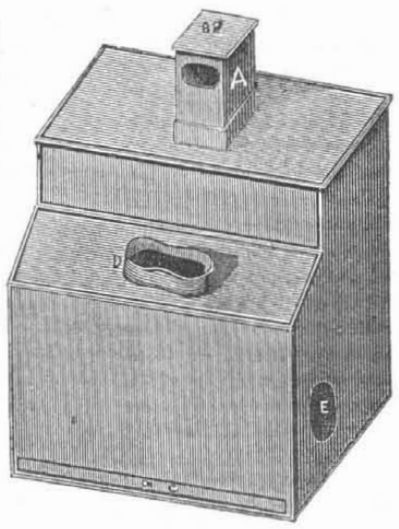
We last week visited the rooms of Mr. Bain in Broadway, this city, and we must confess that we believe him to be the first electric engineer in the world. Perpetual motion may be said to be achieved by his electric clock, for it will go for 100 years without winding up. His autograph telegraph is exceedingly ingenious as by it the fac simile of any person's handwriting may be sent from this city to any other in the Union, and this too without an operator touching the machine after it is once set in motion. This is a wonderful invention, and is as yet in its infancy.

We have no doubt but electric clocks will yet supersede all other kinds. They are very simple and require no attention whatever. A battery composed of a few inches of zinc and charcoal, will propel one for years, and one battery will keep fifty clocks in motion as easily as one. One clock in this city will keep fifty clocks in motion at all the different telegraph stations connected with the central one here.

Progress in Useful Art.

Mr. G. H. Backus, 44 Fulton-st. is now manufacturing Paper Mache goods, such as Japanned Tables, Chairs, &c. &c., heretofore exclusively imported from Europe or from China, and is determined to surpass the best foreign articles in his line, at once in beauty, durabillity and cheapness. His specimens of inlaid ornamental Japanned work are now ready for the public, but they can scarcely fail to win admiration and patronage; and if he were but knavish enough to pass off his fabrics as freshly imported from Paris, he might rapidly acquire a fortune.

The Camera Lucida.



This is the name given to a beautiful little instrument designed as an assistant in the art of drawing, by means of which any person, without previous practice or instruction is enabled to produce upon paper, with pen or pencil a correct drawing of any desired object, whether of landscape, portrait, building or machine. The principle of the Camera Lucida has long being known, being similar to the Camera Obscura; its present portable form however, so as to be applicable to landscape and other drawings, is a recent invention and evidently of great utility. By the simple arrangement of a mirror and lenses in this instrument, a most perfect representation in miniature of the object desired to be drawn, is thrown down upon the paper in front of the operator, and to trace with a pencil the outline and shading of this representation is the only labor to produce a correct and elegant drawing. The instrument is 14 inches long by 10 inches wide at its base, about 12 inches high, shaped as seen in the above cut. A is a slide in the top of the instrument, within which the mirror and lenses are placed. B is a small knob or handle by which the slide is raised or depressed in order to change the focus to suit different eyesights. C is a shallow drawer at the bottom wherein the paper is placed upon which the drawing is to be made. The reflection of the object enters the aperture in the slide, seen near A, and striking on a mirror inside, placed at an angle of 45 degrees, the rays are thus thrown downwards through the lenses within, and fall upon the white paper in the drawer below, forming upon it a most brilliant and correct representation of the object in front of the Camera. D is an aperture through which the operator looks down upon the image on the paper to guide the hand while tracing. On each side of the instrument is an arm hole or sleeve, E, through which the hands are introduced while drawing, sufficiently large to allow them an easy and free movement. Those who have used the Camera Lucida are at first surprised at the elegance and correctness which the instrument enables them to execute drawings. As a medium for useful amusement in families it is unequalled; the portraits of all its members can be taken by one of their own number, as well as pictures of the homestead and surrounding scenery. Of its great convenience and utility to almost every person, it is unnecessary to speak, as it *speaks for itself*. For the convenience of our subscribers and others, we have lately had a large number of the most approved kind constructed, and have them now ready for sale at the very low sum of $6 each. We can send them in boxes with perfect safety to any part of the United States and those who wish them have only to enclose to us by mail the amount above named and they shall be promptly supplied.

The Weather Strip.

This is a very useful and simple invention, and no door that opens to the street especially, should be without it. It costs but little, while it saves much, both by keeping out rain in wet weather and cold in the winter season.—The Agent for it in this State, is Mr. Thomas Judd, of Geneva, an upright dealer, who visited us last week and exhibited the *Weather Strip*. He is now in Pennsylvania selling rights and will be found for a few weeks in Philadelphia.

The Cholera.

This disease will perhaps reach us next year, if not, so much the better, but it is always prudent to prepare for the worst. The cholera appears to be carried by a poison infused in the atmosphere, which acts with peculiar intensity on the mucous membrane of the alimentary canal. The irritation set up in the membrane, in most cases, is not violent at first, but if it be allowed to continue many hours unchecked, it produces such a change in the membrane, that the thin and colorless portion of the blood is poured out from it with the same rapidity as if a large opening were made in the great vein of the arm. Our care must therefore be directed against the presence of an atmosphere which is rendered impure by neglected drainage and the want of proper ventillation and means of promoting salubrity. Documents published by the British Government show that choleraic poison has been freely propagated in all those districts where drainage was neglected, and filth allowed to accumulate, and also show as clearly that places kept free from damp and impurity, and where personal cleanliness and the general health were attended to, were scarcely ever visited with the malady. The Dutch, the cleanest people in the world, escaped.

Florida Reef and Everglades.

At last the Senate of the United States has been aroused from its lethargy on the subject of the wrecks on the Florida Reefs and Keys, by the mass of evidence submitted to that body by the Hon. Mr. Westcott. His Report shows that the average of a million of dollars value is annually wrecked on the Florida Reef and Keys, for the want of an accurate chart of that coast. Not less than fifty three vessels were wrecked in 1846, valued, with their cargoes, at sixteen hundred and twenty four thousand dollars. To prevent a renewal of such disasters, he proposes that our merchants memorialize Congress, that the coast surveyors be instructed to explore that part of Florida without further delay. He also remarks, that although Florida has been held by the United States for twenty seven years yet no original American Chart has ever been made of its dangerous coast; that navigators have to depend upon old Spanish charts, and those made by the British from 1763 to 1784, and imitations of them by Blunt and others. It is also proposed to drain the Everglades, a work which we hope will be executed. Central Florida is perhaps the finest country in the world, not even excepting the valley of Damascus.

Borrowing.

Will our worthy exchange, the *Albion*, St. John, N. B. examine page 176 of the Glasgow Practical Mechanic for 1847, and stand somewhat corrected. The volume, we believe, is in the St. John's Mechanic's Library. It is not original even with the excellent Magazine to which we refer, as the process was in our possession before the date of its publication.

Planing Machines.

In the course of one or two weeks we will again commence the publication of the specifications of Planing Machine Patents—Bentham's of 1793, Emmon's, Muir's, &c. in succession.

Disease from Intemperance.

Dr. Darwin speaking of disease in London says it is remarked that all the diseases arising from drinking spirituous or fomented liquors are liable to become hereditary, even to the third generation; and gradually to increase, if the cause be continued, till the family becomes extinct.

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For the Scientific American.

Patent Laws.—Selling before the Issue of a Patent.

No 2.

By §15 Act of 1836, it is enacted that if a patentee, or other person interested, sue for an infringement, the defendant shall obtain a judgment in his own favor with costs, "if he prove the thing patented was "in public use or on sale *with the consent* and allowance of *the patentee, before* his application for a patent." §6 of the same Act provides that a patent may be issued to any inventor, for any machine, &c. which, besides being new, is "not at the time of his application for a patent, *in public use* or on *sale*, with his consent or allowance as the inventor or discoverer;" and §7 directs the Commissioner *to issue* a patent for any thing which, among other things, has not been "in *public use* or *on sale*, with the applicant's consent or allowance." All these provisions, however, are amended by §7 of the Act of 1839 before recited, although no words of amendment are used, for that section covers the whole ground of sales, and being in effect and operation contrary to the anterior provisions just mentioned, it must take their place. The term, "public use," as above used, is judicially interpreted to mean—not a universal or extensive use, but a use by *one or more* persons than the inventor, in such an open manner that the public or any person who desires may obtain a knowledge of the invention: and the same interpretation is given to the expressions "on sale," "vending," &c. by which is meant the exposing of any article or articles, in any shop, store, or other place, in any manner, for sale to any person who is willing to buy. Whether the article be actually sold or used is of no consequence: it is enough if the owner was willing or desirous to sell it, and this fact were or might become known to any others besides himself, who could purchase if they would.

In regard to sales made *after filing a caveat*, the law is not fully settled, and, until the subject comes before the Supreme Court, decisions at the Circuits will, as heretofore, be conflicting. But, to correct misapprehension as far as possible, it may be proper to embrace the subject of sales in a brief general exposition of the whole doctrine concerning Caveats.

By §12 Act of 1836, any person who has not matured his invention, and yet has the same so far completed that it can be clearly perceived to be a new invention though not a perfect one, may, by filing a description and drawing (where one can be made) and a petition setting forth his desire for protection, (at the same time paying $20,) have the same deposited in the "confidential archives" of the Office. If "*within one year after*" *the filing*, application for a patent is made by any other person for an invention which is similar or in any way conflicts with the former, the person filing the caveat is notified of that fact by the Commissioner, and must then *within three months*, file his specification, model and drawings, or, in other words, must mature his invention and apply regularly for a patent, or the other inventor will receive a patent. If he apply in due form, then his right to a patent will be decided in the same manner as two conflicting applications for a patent, that is to say, proof as to which was the first inventor, which is by first ascertaining who first made a model or specimen of the invention, and communicated a knowledge of it to the public (viz. any other person beside himself,) and if the Caveator prevail he obtains a patent on the payment of $10.

If however, no conflicting claims be made at the office *within* one year, the Caveator is not entitled to any notice of another's application subsequently; and though he may *at any time* thereafter, obtain a patent on the payment of $10, ($20 having been paid for the Caveat,) yet if a patent has in the meantime been granted to another, which embraces the same invention or any part of it, he must take steps to set that aside, which are, by presenting facts and evidence before a special Board of Examiners to show that he was the first and true inventor.

The filing of a Caveat, then, it is evident, is not equivalent to *an application* for a patent, and the only protection it gives is the privilege of notice of conflicting "applications," (not conflicting Caveats.)

As the statute says nothing concerning sales under Caveats, they must be governed by the same rules as sales before "applications." These I have before set forth, and are all contained in §7 of the Act of 1839 first recited.

It appears then, that sales of new inventions may be made before a regular application for a patent is filed in the office, (for it is the *filing* of petition, specification, drawings and model, that constitutes the "application.") But every "specific" machine, specimen or identical article sold, *prior* to the application may at any time be resold by the purchaser, as well after as before the patent issues: though any person who buys of him *after* the patent is applied for, is entitled only to *use* the purchase, which he may do "without liability therefor to the patentee or any person interested."

One important fact must always be borne in mind. If the inventor does not apply for a patent "within two years" after the first sale of his invention to any individual, he cannot obtain a patent, provided that fact be made known at the office, or if he do obtain a patent, it will for that reason be held void, whenever the subject is brought before the Courts upon a suit for infringement.

Rochester, N. Y. W. F. Liddell.

(*To be continued.*)

Fossil Footprints.

Dexter Marsh, a mechanic of Greenfield, Mass. many years ago, discovered on the flagging stones with which he was laying a side walk, what appeared to be the foot-prints of some strange bird. The geologists pronounced them to be such, and to belong to a period before the creation of man. This discovery so excited the curiosity and scientific ardor of Mr. Marsh, that he has since made it his amusement to look for such impressions, and he has traversed the valley from the northern Massachusetts line to Wethersfield, Conn., sometimes spending weeks in quarrying rocks with the sole view of discovering these ancient tracks. In the last number of Silliman's Journal of Science, he gives a brief account of his labors and successes, from which we may understand that the Connecticut valley, in by gone ages, was a favorite resort of birds, that would have made no more of putting a man in their crops, than turkies do of swallowing grasshoppers.

Mr. Marsh has in his possession more than eight hundred foot-prints of birds and quadrupeds, besides having furnished many specimens to others, in this and other countries. In some cases these specimens are so distinct as not only to show the joints of the toes, but the perfect impression of the skin. He has perfect tracks of quadrupeds so small that a half dime will cover the whole foot, and again others of birds where the foot measures half a yard from the toe to the heel, so that if the birds which made them were proportioned like those we now have, they must have stood twenty feet high!

He has sometimes followed the track of a bird thirty or forty feet in the rock, the track being at first faint as if on hard soil; then more distinct, as if imprinted on the sand at the water's edge, and finally sinking in the mud and disappearing in the water. He has one slab four or five inches thick, upon which the tracks appear as mere straight lines upon the surface; but on spliting it into five layers, they grow more and more distinct, till the lower slab shows where the foot rested, just as if when the stone was in a state of mud, the bird trod down to the bottom of it, and on withdrawing the foot the mud closed up.

Among these tracks are many very unlike to those made by any known animals, but still so marked as to leave no doubt that animals made them. A sort of Kangaroo, for example, shows very small fore feet, and very large hind ones. Of this the Journal of Science gives a striking cut.

Ignorance and Crime.

By the official return it appears that of the 56 prisoners in the Durham county Goal, England who took their trials at the summer assizes, 25 could neither read nor write, whilst the remaining 21 could only read and write imperfectly.

Foreign Correspondence.

Dear Scientific.—Trade in our city is still enshrouded in gloom—the foreign market upon which our hive of working bees depend, is at present, and has been for a long time much depressed, consequently there is much suffering among our working people, for where there is no work, there is no pay. All portions of our community are suffering on this account, for there is less consumed than when trade was good, hence circulation is curtailed and our farmers and merchants are alike involved in the common distress. I trust this may be a warning to them, and that their hearts and eyes will be opened (for their own sakes) to the importance *of good wages and plenty of work*, being a benefit to all.

The cholera is expected to visit our pent up city, and there are some miserable lanes and streets, such as the Vennels and one called Goose Dubbs, that will be swept of their inhabitants as if a blast of the desert swept through them. I would desire to warn New York against the coming pestilence, as in all likelihood it will reach you the coming summer. Let the poor in your city, be exhorted, and if need be, compelled to cleanliness and proper ventillation, and no undue fears need be entertained for the *Scourge of Asia*,

A new Tidal and Meteorological Clock has been erected in the passenger waiting room at our Steamboat Quay, Broomielaw. It is an instrument of a very ingenious and intricate description, and one which will prove of immense value to science. It may be described as a self-acting and self-registering tide, wind, and weather guage. The instrument consists of eight parts viz. :—

The Clock, which shows the hours and minutes.

The Barometer, indicating at each hour the pressure of the atmosphere.

The Tide Guage, exhibiting the time of high and low water also the depth in feet.

The Spate (freshet) Guage, showing the height to which spates in the river rise above the tide at high water.

The Anemometer, indicating the force of the wind, expressed in lbs.

The Thermometer, showing the temperature of the air.

The Anemoscope, showing the direction of the wind.

The Rain Guage, which indicates when the rain commences, the time of its duration, and the amount of rain fallen, expressed in tenths of an inch.

All the changes in tides and weather are indicated by curved or sectional lines on a large sheet of ruled paper, wrapped round a vertical cylinder, which revolves once in a week. The fidelity of the pencils tracing their reports is most wonderful. There they are at their most silent work day and night. Every change of tide, the measurement of its height; the changes in the wind, its force; the state of the atmosphere, with the hours at which all these phenomena take place, are observed and noted with unerring accuracy.—This most elaborate and comprehensive instrument is the construction of the Messrs. Bryson of Edinburgh, and has been erected by the Clyde Trustees at a cost of about £250. We do not know of any other such instru- in existence. The only other attempt at such registrations was made by the Royal Society of Edinburgh. But, alas for the interests of science, after a year of unobserved observations the whole thing was given up, because the Royal Society could not afford to keep a person to superintend the machine, and register its observations! It is to be hoped, however that no short-sighted policy of this kind will ever prevent our Trustees from maintaining and registering all the results furnished by this beautiful instrument.

A new kind of steam engine called the Parallelopiped, has lately been invented by Mr. John McDowall, of Johnstone, a place about 12 miles from this city, and a short distance from the birth place of the immortal Wallace. The engine of Mr. McDowall has been highly praised by some, but in spite of its pompous name, it is no more than a kind of semi-rotary, but certainly a most excellent one.—The inventor of it is a man of great ingenuity, and a thoroughly scientific and practical man; and I have no doubt if there is any person living who can construct a good rotary engine, Mr. McDowall is the person. It is said that he greatly assisted Malcom Muir in the invention of his famous planing machine and he has long been famous among us for many useful inventions. It will take time however, to prove the superiority of his Parallelopiped.

You will perceive that in this city of mechanics, we are still doing something for the benefit of Science and Art. Our engineers feel somewhat proud of the success of the new steamers built here for the Royal Mail line, but in no instance have I heard any vain boasting or exulting at their success. As a general thing, our engineers are well educated and have perhaps the best opportunities in the world to acquire a good education in drawing and mathematics. This is owing to an excellent Mechanics Institute being founded for the very purpose of instructing workingmen and especially apprentices, by good evening classes. T. McC.

Glasgow, Sept. 20, 1848.

For the Scientific American.

Turning of Irregular Forms.

During the last eighty years Lathes for turning irregular forms from a model, have been brought to great perfection. The machines for turning ship's block's and dead-eyes, as described in the different Encyclopedias, and the Rose Lathe, are well known in Europe and this country. In 1818, or earlier, Azariah Woolworth, an ingenious mechanic of Connecticut, invented a lathe for turning lasts, with the use of the *revolving* cutters, a guide and a model; these parts, viz. the cutters, guide and model, he did not claim as his, as they had been in use many years before, but his lathe enabled the mechanic to turn right and left lasts from the same model, and by a happy adaptation of its parts performed the work admirably. Woolworth after various experiments applied for a patent and obtained it in April 1820, and sold his right. Thomas Blanchard also got up a lathe, after Woolworth's, but obtained a patent prior in date; the two lathes were nearly alike, the variations were more formal than substantial; and Blanchard, as did Woolworth, disclaimed the cutter wheel, guide and model as his invention, as they had been in use for many years, and as such a claim would have made his patent void. These two conflicting rights led to litigation, but it was settled by Blanchard's buying his opponent's patent. Woolworth's patent has expired, but Blanchard's patent has been continued by Acts obtained from Congress upon the mistaken assumption that his invention was prior to Woolworth's.

The lathes of Woolworth and Blanchard could only turn a resemblance to the model, and also could add to the length without adding to the breadth, and vice versa. A set of lasts, 14 in number, of different sizes, required that number of models, and this was an expense of both time and material.

About 1842, a new lathe for turning lasts was invented by Sylvester S. Chase, an ingenious mechanic of Philadelphia, which, by the ingenious combination of its parts, enables the mechanic to produce from a single model all sizes of lasts. Chase uses the cutter-wheel, guide and model, with a combination of levers working on the principle of the Pentograph, and produces the work with rapidity and the best degree of accuracy. Chase did not patent his invention, and it is therefore common property.

The lathe of Chase has now superseded the others which were constructed on the principle of Woolworth's and Blanchard's. The lathes now made by Blanchard are made upon Chase's plan. Mr. Chase constructs lathes upon the principle he invented, and they have been found so superior as to exclude competition. Yours, &c.

Philadelphia. J. B. Eldridge.

The animalcules possess the most considerable generative power in organic nature, a single individual being able in a few hours to produce several millions of beings like itself.

The principal Railway companies in England have all declared reduced dividends for the first six months of this year.

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TO CORRESPONDENTS.

"O. P. B. of Ill."—Of the many machines for making Brick now in use, Adams' is the best we know of. Nathanial Adams, Canterbury, Orange Co. N. Y. is the inventor, from whom, by addressing him a letter, you can obtain every particular you may desire. His machines have been thoroughly tested. Much obliged for your exertions in our behalf.—Hope to receive your drawing soon. $5, O. K.

"W. R. G. of N. Y."—A locomotive boiler combining *all* the requisites you desire will cost, for a 4 horse engine $400; for a 6 horse engine $600. Ordinary boilers can be had much less, but for the purpose you have in view uncommon care will be required in the construction.

"V. P. K. of N. Y."—At the place you speak of, they keep their machinery as secret as possible allowing no one to see it. No preparation is required that we are aware of beforehand, except the thorough drying of the article. Keep trying and you will hit the mark. You can get your Nos. bound and the missing ones supplied, by sending to us.

"E. J. C. of Miss."—Of all the metals Copper is the best conductor of Electricity and a lightning rod formed of small copper wires twisted together, forms the best protection for buildings. A conductor of this kind is almost as flexible as a rod; some contrivance is therefore necessary in order to make it stand erect above the building. For this purpose a common iron tube of a size sufficient to withstand the force of the wind is employed, through which the conductor is drawn and then soldered to a pointed cap of copper, the base of its cap being a little longer than the tube. The tube may be fastened up in any convenient manner. The conductor should be about three eights of an inch in diameter, its lower end extending into the ground at least 4 feet. Conductors should project as high as possible from the chimnies. If a tree taller than the building stands near, a conductor should be placed thereon.

"N. S. of Boston."—We have delayed writing to you because we were expecting daily to receive the sample which you mention as sending to us by Adams & Co. The money was received and we have given you credit for the amount.

"T. H. L. of Mass."—It is very difficult to give the desired information as iron is a very sensitive metal. For wheels and such things, we know not how the real purified malleable iron can be dispensed with, yet we have been told that a little manganese and chalk does wonders—this we could not positively recommend, although on a small experiment it was successful.

"C. L. Y. of Ohio."—Ear trumpets can be made in this city. They are of great benefit. We will endeavor to tell you more about them.

"A. B. of Va."—We expect to hear from you soon.

"T. J. C. of Md."—The letter is now out of our possession and the name we cannot remember. It is a pity you did not write two months ago. The place of residence, however, is Niagara Falls.

"A. B. of Ohio,"—The plan you describe has been several times tried, hut as yet unsuccessfully. For ourselves, we think it cannot be made to operate.

U. S. Mail Steamships.

The U. S. Mail Steamships of the New York and Liverpool line, are in rapid progress of construction. They are to be five in number, and the proprietors and agents of the line, Messrs. Collins & Co., have selected Occeanic names for their Ocean Steamers. They are to be called the Atlantic the Pacific, the Arctic, the Adriatic and the Baltic. The first two will be launched about the 1st of December, and two others in time to keep up the line. They are to be of about 2,900 tons each, and built in the best manner and with all the improvements which experience both at home and abroad have suggested. We expect from these to compete successfully with the Royal Mail Line.

Pictorial National Society.

This cheap and popular Magazine continues to thrive and is one of the best Monthlies with which we are acquainted. It is full of splendid wood Engravings representing American views, and is composed of 48 pages of interesting reading matter printed on fine paper. Simonds and Co. Publishers, 12 School st. Boston; price $2 per annum.

Palmer's Business Men's Almanac.

This is the best Almanac for 1849, that we have seen. Every working man and merchant should have one. Price 12½ cents, at the Tribune Buildings. There is a fund of information in it, not amusing, but what is better, instructive.

The Union for October.

A splendid number indeed is the October of the Union Magazine, and we take pleasure in calling the attention of our friends to it. "The better Morning" by Sadd, is a fine picture and worth a dollar of itself, besides it has five other plates that are but little inferior. Published at 142 Nassau st.

Agency Revoked.

In consequence of the non fulfilment of many promises made by one W. H. Caniff, of Utica, N. Y., Agent for the Scientific American, we hereby withdraw our Agency from him and request that no person will pay him any monies on our account.

Wanted—a local agent to fill the above station who will act honorably both to his subscribers and the publishers.

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To Mill Owners.

HAVILAND & TUTTLE'S Patent Centre Vent Pressure Water Wheel.—These wheels are now in successful operation in many towns in Maine, Massachusetts, and Rhode Island, and are found to surpass in power and facility of adaptation any water wheel now in use. This wheel was awarded the silver medal at the Fair of the American Institute recently held in New York and a diploma at the Mechanics' Fair in Boston.

The wheels are manufactured and for sale by the FULTON IRON FOUNDRY CO., South Boston, Mass.,—where the wheels can be seen and any information concerning them had.

Patent Rights for different States, Counties, &c. for sale, as above. o14 3m*

Those Hats

KNOX of 128 Fulton street, is on hand with his Autumn style of Hats, and as usual furnishes a little prettier shape, made of a little better material and for a much less price than many of his Broadway friends who boast of the superiority of their productions.

The public won't swallow that gammon, gentlemen, and you had better put your prices down to Knox's standard price, before he detracts all those regular customers from Broadway into Fulton st. o7

PECK'S PATENT VISE WITH FOOT LEVER.

THIS Vise is worked entirely by the foot and is admitted by all who have used them to be the best and, strength, saving of time and convenience considered, the cheapest Vise in use. For sale by QUINCY & DELAPIERE, 71 John st. New York; Geo. H. Gray & Co. Boston Curtis & Hand, Philadelphia; Way & Brothers, Hartford; and by the proprietor, J. S. GRIFFING,
o7 2m* New Haven, Ct.

HOW TO OBTAIN THE PREMIUM.

THE Subscriber would respectfully inform all persons having articles exhibiting at the Fair, that he is prepared to execute engravings on wood for circulars, &c. at the shortest notice, and on the most reasonable terms

Particular attention given to engravings of Machinery, Stoves, Buildings, &c.

WARREN G. BUTLER,
o7 53 Fulton street, cor. Cliff.

The Best Patent Agency in the United States.

THE subscribers would respectfully give notice that they still continue to attend to Patent Office business as usual. The long experience they have had in securing patents, together with their unrivalled facilities, enables them to say that THE BEST PATENT AGENCY, in the United States, IS AT THE OFFICE OF THE SCIENTIFIC AMERICAN, New York. It is not necessary, as commonly supposed, for an inventor to make a journey to Washington in person, in order to secure a Patent, as he cannot in any manner hasten the Patent or make his invention more secure. Any business connected with the Patent Office may be done by letter, through the Scientific American Office, with the same facility and certainty as though the inventor came in person. From a want of knowledge on this point, applicants for patents are often obliged to submit to great vexation, with loss of much money and time. They also frequently fall into the hands of designing persons, and lose their inventions as well as money. Those who wish to take out Patents or enter Caveats, should by all means have the business transacted through the Scientific American Office, as they may then rely upon its being done in a straight forward and prompt manner, on the very lowest terms. All letters must be Post Paid and directed to MUNN & CO.,
Publishers of the Scientific American,
s9 128 Fulton street, New York.

The largest, best and cheapest Dictionary in the English language, is confessedly

WEBSTER'S,

the entire work, unabridged, in 1 vol. Crown Quarto, 1452 pp. with portrait of the author, revised by Professor Goodrich, of Yale College. Price, $6.

"The most complete, accurate, and reliable Dictionary of the Language," is the recent testimony given to this work by many Presidents of Colleges, and other distinguished literary men throughout the country.

Containing three times the amount of matter of any other English Dictionary compiled in this country, or any Abridgment of this work, yet

"Its definitions are models of condensation and purity. The most complete work of the kind that any nation can boast of."—Hon. Wm. B. Calhoun.

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Morse's Air Distributor,

For Burning Saw Dust or Tan instead of Wood for running Steam Engines.

STEAM SAW MILLS are now running and have all the heat they require, from the saw dust and bark, saving the slabs and cord wood heretofore used. Tanneries also by this air distributor, have all the fuel they want by burning the tan. The saving is a great one, and the expence of the arrangement trifling, compared to the advantages.

The undersigned has the exclusive right to vend, use, and manufacture "Morse's Air Distributor," in the state of New York, to whom application may be made.

☞ Infringements on this patent will be prosecuted, and the rights secured by the letters patent rigidly enforced.

Lockport, 8th mo. 28, 1848. L. A. SPALDING.

CERTIFICATES.

Lockport, N. Y. Sept. 18, 1848

I hereby certify that I have one of Morse & Brother's Air Distributors, in my Steam Saw Mill at this place. My fire place is 11 feet by four feet 9 inches, under 3 flue Boilers, 12 feet long by 40 inches diameter. I have 2 engines, the cylinders are, one of 12 and one of 10 inch diameter, and 2 feet stroke.

The sawdust, bark and clips from the oak plank I am sawing (without any cord wood or slabs) is all sufficient for driving my two Gang saws for plank, and five gang of Saws for sawing stone.

I have a superior chimney. The draft is perfect. My engineer and Firemen say, they get up steam in about half the time they formerly took. To me the saving is great—any one can calculate for himself. GEO. REYNALE.

To L. A. Spalding.

We have been running a Steam Engine for some years, to propel machinery for driving a tannery with a large bark Mill, two sets heavy Hide Mills, four Pumps, one Roller, two Last Machines for Turning Lasts, two Machines for finishing Lasts, and one Circular Saw for sawing timber—the Engine supposed to be fourteen horse power—in which we used two cords of wood (hard) per day. Thirty-three days ago to-day we were induced to try Morse's Patent Grates, or Air Distributor, and to our entire satisfaction. We find a saving of at least 4 dollars per day in using Tan. We find no trouble in raising all the Steam we want, with Tan. Since we have put in your Patent Burner, we have not used a stick of wood, and we cheerfully recommend them to any, and to all who wish to save wood, where Saw-dust, Tan or coal may be used. N. CASE & CO.
Buffalo, June 19, 1848 s23 4t

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THIS Machine, on which Letters Patent were granted May 1st, 1847, has been in successful operation for the past year, and hundreds of thousands of staves have been dressed by it. It is warranted to dress the same quantity of staves with as little power as any that can be started, also leave the full thickness on thin edges and thin ends, and conform as near to the crooks and twists of the timber as can be desired. The jointing of the machine which accompanies it, has been subjected to the severest test, and pronounced superior to that performed by hand. Application for a patent on the Jointer has been made.

Large quantities of Hogsheads and Shooks made with staves dressed and jointed with their machines have been sold and used to the entire satisfaction of the purchasers.

For rights and machines address the proprietors at their Manufactory, Artizan street, New Haven, Connecticut, where machines in full operation may be seen. JUDSON & PARDEE.
New Haven, July 17, 1748. jy29 3m*

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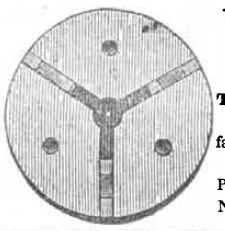

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THOMAS PROSSER, Patentee,
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For the Scientific American.

New Chemical Law.

No. 4.

All the conditions required by this law cannot at present be given, because there are many substances with which we are but little acquainted. The result of future experiments must, however, coincide with the requirements of the law.

All those essential oils, which are considered as having the composition of C5, H4, I consider as aggregated compounds produced from one radial. By classifying them according to the requirements of the law, that is, by their specific gravities, boiling points, &c. we should obtain their true composition. The specific gravities of their vapors would be of the utmost importance in the calculation.—This law shows the probable reason of the solidity of caoutchouc, a substance possessing the same empirical composition, as the above named essential oils, but is probably a substance of the highest state of aggregation.

Chysene C12, H4, solid.
Idrialine, C21, H7, solid.

The radial of this series is probably C3, H.

	Sp. Gr.	B. Pt	S. G. Vap
Napthaline C10, H4,	1,048	413°	4,488.
Paranapthaline C20, H8,			

Chemists have not yet decided on the true formula of the above substance The specific gravities of their vapors would decide this point precisely. The specific gravity and boiling point of paranapthaline are not given but they are greater than those of Napthaline There is no doubt but many other substances belong to this family which have have not yet been examined.

Chlorine is capable of being substituted for the hydrogen in the above substances, according to the Theory of Types and Substitution by Dumas, which does not in the least interfere with the operation of this law, buti s rather a help, as the conditions required by the law remain the same.

The following gives an instance of the compounds of an aggregated series with hydrogen, forming hydracids, although the substances composing the series have not been discovered in their uncombined state. The conditions required of compounds by this law, should therefore be existent here. Unfortunately the specific gravities and boiling points of these substances have not been given. Future experiments are wanting to show the application of the law to this example.

Mellitic Acid C4, O4+H.
Croconic Acid C5, O5+H.
Rhodizonic Acid C7, O7+H.

While the boiling points of the above class of substances must increase, their specific gravities may decrease; whether they increase or decrease however, it must be accompanied by a constant regularity. The carbonic oxides are the substances composing the aggregated series, and are probably derived by the aggregation of the radical C O.

Many other instances can be given illustrating the truth of the law, but I shall conclude the example by the introduction of a class highly important, as it is a class with which chemists are more particularly acquainted, and of which the specific gravities, boiling points, &c. have generally been previously calculated. I have reference to the radical C H, and the substances produced by its aggregation.

	Sp. Gr.	B. Point.	
Olefiant Gas 2C, H			gas.
Etherene 4 C, H.	,627		fluid.
Amilene 10 C, H.			fluid.
Cetene 32 C, H.		527°	fluid.
(No name) 33 C, H.			fluid.
" 34 C, H.			fluid.

All equicarb hydrogens may be included in the above series. It may be observed that as the radical aggregates, the general density of the substances produced increase, thus the first of the list is a gas: the next, however, partly partakes, both of the nature of a gas and a fluid, it being a gas at common temperature, but changes into the fluid state by the abstraction of its heat. The rest are all fluids and increase in their specific gravities as the aggregation proceeds. The boiling points also agree with the conditions required, for it is well understood that if a substance exists as a gas at common temperatures, then must its boiling point be far below common temperatures, consequently the first two substances, which exist at common temperatures in the state of a gas, possess boiling points far below common temperatures. The third substance, Amilene, is fluid at common temperatures, consequently its boiling point must be greater than that of Etherene, and so we pass on until we arrive at Cetene, which possesses a boiling point as high as 527°. Upon examination, the specific gravities of their vapors will be found nearly proportional to their atomic weight. S. N.

Bridgeport, Conn.

[To a great number of our readers, the essays we are now publishing on Chemistry, will appear like lectures on Greek. This is owing to a want of general knowledge respecting the terms and symbols that are used to designate this and that substance. We would advise our readers to get an elementary work on Chemistry and master the terms—the first thing that should be done in the acquirement of any science. We urge this upon our readers for we desire to see a more general diffusion of chemical knowledge among our people. Kane's Chemistry is a good work and will be found very instructive, and it can be purchased at almost all the Book Stores.—Ed.

The Solubility of the Oxides of Iron, Copper, and Cobalt, in Caustic Potash.

In making use of the apparatus invented by M. Liebig, for the determination of carbonic acid, M. Volkir of Berlin, Prussia, found that the solution of caustic potash employed, was at first quite clear, contained, after the passage through it of carbonic acid, a brown floculent precipitate of oxide of iron. Some direct experiments, made with a concentrated solution of caustic potash and oxide of iron, recently precipitated, confirmed the nature of this substance: consequently, M. Volkir recommends, for the separation of alumina and oxide of iron, a solution of caustic potash, and moderately concentrated (if the solution be too diluted the alumina will be but partially dissolved.) The oxides of copper and cobalt dissolve in large quantities in caustic potash, so much so that we can even employ the solution of this first named oxide to determine small quantities of grape sugar mixed with cane sugar, which reduces the detoxide of copper to the state of protoxide. In order to assure himself of the correctness of the statement of M. Berzelius, that the solubility of oxide of copper in caustic potash was due only to the presence of organic matters M. Volkir acted with the greatest possible precaution; he states, however, he found his experiments fully confirmed. The solution of the oxide of copper in caustic potash, may be diluted with water, without a separation of the oxide of copper. When a current of chlorine is passed through a solution of the oxide of copper, in caustic potash, the liquid assumes a deep green; but the moment that the alkali is completely saturated with chlorine, the combination which was formed is decomposed, the oxide of copper is precipitated, and chlorine disengaged.

Cure for Toothache.

Dr. Arnott, of Brighton, says in the London Lancet. "A degree of cold below the freezing point of water is, I believe, a new agent in therapeutics, which would, probably, be usefully employed for various other important purposes. A solution of salt, of a very low temperature, by acting on the exposed nerve, might at once, and permanently, remove toothache.

Iron pipe compared with Wood.

A pipe of cast iron 14 inches diameter and three quarters of an inch thick will sustain a head of water of 600 feet. One of oak, 2 inches thick and of the same diameter will sustain a head of 180 feet.

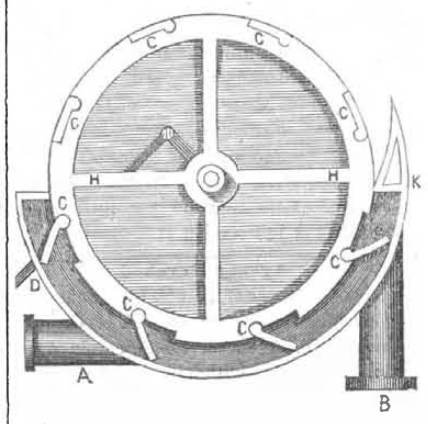
History of the Rotary Engine.

Prepared expressly for the Scientific American.

COOK'S ROTARY ENGINE.

This drawing and description is taken from the transactions of the Royal Irish Academy for 1787, and was the invention of a Mr. Cooke of Dublin, we believe.

Fig 8.



On the circumference of a wheel eight vanes or flaps are attached by joints, which are formed to open somewhat more than half of their circumference. During the revolution of the wheel the valves, which are on the lower half of the circumference, hang in a vertical direction by their own gravity. C C C, are the valves or flaps; B, is the tube which admits steam from the boiler; A a tube leading to the condenser. K K, is the case in which the wheel H H, is enclosed—this case is to be steam tight. The wheel being supposed in the situation in the figure, the valves prevent any communication between the boiler and condenser. Steam is now admitted at B and, passing on C C, forces them forward in its passage to the condenser and produces movement. The condenser is worked by a crank in its axis, and a rod D is extended from it which keeps a constant vacuum in that half of the steam case:—"by this means a power is added to the steam equal to the weight of the atmosphere; so that, when the force of the steam is only equal to the pressure of the atmosphere, and the valves are six inches square, the wheel will be forced round by a power equal to 531 1-4 lbs. placed on its circumference."

The construction of this machine is very poor and its operation impracticable. The South of Ireland has been singularly deficient in mechanical invention and discovery, although she has produced some splendid artists. The North of Ireland which claims a different paternity from the South, has on the other hand been very greatly distinguished from mechanical invention, but on the whole Ireland has done nothing in inventions to the number of the people and to their well known quickness of learning when an opportunity of a proper education is offered.

Attraction of Cohesion.

Particles of matter, when brought close together, or within insensible distances, have a tendency to cohere or stick together. This is termed the *attraction of cohesion.* Under the influence of this attraction particles of fluid matter, arrange themselves around a centre and take a globular form. The dew drop, suspended from the point of a thorn is a familiar example of matter thus acting. If two such drops are brought together they will instantly unite, a new and common centre will be established for both and they will resolve themselves into a new mass equally globular as before.

Attraction of Gravitation.

Particles of matter have a tendency to move or be drawn towards each other, called the *attraction of gravitation.* If we take two fragments of cork, no matter how small and set them afloat in a cup of water, we see the operation of this law. If kept a considerable distance apart, the impediments to their mutual attraction being too strong, they will not come together. But if brought within a short distance of each other we shall observe them begin mutually to exercise an influence over each other, and immediately they will rush together and so remain.

A Metal that expands most in Cooling.

Lead 9 parts, Bismuth 1 part, Antimony 2 parts.

To Remove Rust from Polished Steel.

Rub the spots with any kind of soft animal fat, and lay the articles by, wrapped up in thick paper for two or three days; then after cleaning off the grease with a piece of soft flannel, rub the spots well with powdered rotten stone and sweet oil, after which the polish may be restored by rubbing with powdered emery on soft leather; and the process may be finished with finely powdered chalk or magnesia.—*Ex.*

A better plan is to take soft soap and rub the knives, &c. on a board with rotten-stone, and afterwards polish up with Tripoli. Charcoal ground to powder is one of the best things ever discovered to clean knives. This is a late and valuable discovery.

How to Plant Chesnuts.

The plan of raising the chesnut is this: the nuts must not be suffered to become stock dry. Plant them in the spring of the year. The first winter protect them from the frost, or they are apt to be killed by the freezing. The next spring transplant in the following manner: Select a dry soil, dig a hole 18 inches deep, 3 feet wide: fill it up with small loose stones and clay to within six inches of the surface; set your tree on that; take care of it and it will grow well, and in four years bear nuts.

The chesnut should be more attended to, than it is—it is valuable food and very nourishing. In Italy the chesnuts grow to the size of small apples and are used as food by the peasantry.

Tides.

The difference in the the time between high water averages about 49 minutes each day.

Baked Apples are greatly improved by being baked in a bright tin or earthen plate, with a little water in, and a small quantity of sugar sprinkled over them.

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